

ON THE ESTIMATION OF DISABILITY AND DISEASE DUE TO INJURY.*

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The literature in regard to the medico-legal aspect of disability and disease resulting from injury is at present almost exclusively German. I know of no work in English which deals with the subject in a general way, though several of those referring to special parts of it are among the most valuable we possess. The reason for the preponderance of German literature in this field lies in the very extensive system of government insurance against industrial accidents, introduced into Germany in 1884 and controlled by the German Imperial Insurance Bureau. This has resulted in the training of a class of medical officials whose unbiased and thoroughly scientific study of the questions involved cannot be placed too high.

The principle of an equitable compensation of labour accidents has been enforced by law in Switzerland (1884), Austria (1887), Italy (1898), Belgium (1894), Norway (1894), Denmark (1898), Finland (1897), England (1898) and France (1898), and will before long probably be adopted by all civilized countries. Russia and Sweden have similar laws already drafted. A bill aiming at this was introduced recently in the Ontario Legislature, but has not yet become law. I understand that similar legislation is contemplated for the Province of Quebec.

The above legislation is in all cases based on the principle that in the case of personal injury received through accident, occurring in connection with occupation and not intentionally caused by the employee or specific negligence on the part of the employer, the loss should be shared between employer and employee under conditions fixed by the government, which also guarantees the payment of such indemnity as may be decided upon, if the employer becomes financially unable to do so. The amount of such indemnity paid by the employer varies from 50 per cent. in England and France to 60 per cent. in Austria, and 66 2-3 per cent. in Germany and Switzerland. The non-compensated part of the loss represents the workman's share. As a rule the loss is equalized by systems of liability insurance or by mutual benefit societies guaranteed by government, the assessment varying with the localities

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It is purposed to supplement the present article by subsequent ones dealing with the topics of "Methods of Examination for Disability," "Trauma in Relation to Disease," and "Disability Due to Sickness."

and the particular trades insured. Payment by annuity is mostly followed, though in England this may be commuted by a lump sum calculated on a basis of three years full wages.

The limitation of liability does not apply to cases in which specific negligence of the employer is proved, in which case the full amount of damages may be recovered under the common law; but in England the injured person must decide at the outset whether he will accept the partial indemnity or proceed in the courts. A very clear summary of the law on the subject has been recently published by Professor F. P. Walton, (*La Revue Legale, Feb., 1900.*)

As the assumption is that the employer is liable for a certain proportion of the loss in all cases unless exceptional negligence is shown, the legal questions under the government insurance system, are relatively scanty; and the assessment of the amount of disability incurred, which is essentially a medical matter, is the chief problem. The question of what constitutes sufficient ground for assuming a certain medical fact to be proved, is of course a matter of judicial decision. In Germany, Austria and Switzerland, there are over 20,000,000 persons insured under the laws, and the claims from over half a million accidental injuries are annually adjusted by the officials. In Germany, the hospital or home treatment is free during the first three months following an injury, but compensation only begins at the termination of three months.

The conditions under which we have to do with the estimation of disability are :—

- (1) Employer's liability.
- (2) Accident insurance and benefit societies.
- (3) Medico-legal damage claims.
- (4) Pensions, etc.

In employer's liability, the nature of the medical work depends largely upon whether special legislation exists concerning responsibility in ordinary cases, or whether the responsibility is left an open matter to be settled by litigation in each case. In the former, the medical study of the case is the chief factor; in the latter, the legal element dominates from the outset, and the medical problems are of secondary importance. In accident insurance, the liability is limited by contract, the amount, rates and compensation being specified, and a proviso made excluding all effects of illness or constitutional conditions, so that the medical aspect of the case is considerably narrowed. Hence, comparatively few accident insurance claims, unless grossly unreasonable, are contested, apart from the fact that from business reasons a reputation for paying claims is generally sought.

In medico-legal damage claims, one of the chief hindrances to rational adjustment is the circumstance that the facts are often only known to

one side and the amount demanded is usually much in excess of fair compensation. It is especially in these cases that trivial proofs of injuries, which are often non-existent, are supported by expert testimony of a kind which has obtained for medico-legal experts as a class a more than doubtful reputation.

The above is mentioned to indicate how one set of conditions, which rarely calls for serious medical consideration under certain circumstances, may form the bulk of medico-legal work in others. The amount of trouble and expense caused to railroad companies, for instance, by cases where the injury is ill defined, non-existent, or exaggerated or misrepresented, far exceeds that caused by definite severe and well authenticated injuries. It must be remembered, however, that the element of prognosis, with all its attendant uncertainty, enters largely into this branch of medico-legal work, whereas the criminal branch of legal medicine deals mainly with what is past.

The closely allied subject of sickness insurance, which has been thoroughly studied in Germany and to which our insurance companies are now beginning to devote attention, presents many points of interest which have not received the scientific study they deserve from the medical officers connected with benefit societies.

In the present article the subject matter is divided as follows :—

- (1) Permanent disability from injury.
- (2) Temporary disability from injury.

In giving practical instruction on the estimation of disability due to injury in connection with my medico-legal course, I found it impossible to obtain adequate information on the subject from any of our English text-books.* I had, therefore, prepared, in the form of synopses, a concise summary of the statements of the leading German authorities (especially C. Kaufmann and Ch. Thiem) for the use of my students. These are reproduced together with an abstract of some of the comments made about the more important topics.

It has since occurred to me that this might also be of service to physicians concerned in accident insurance work or who have to give evidence about damage cases in court, as well as insurance officials, judges, claims agents and those having to do with pensions of any kind. It is remarkable how little use has been made hitherto of the very convenient continental method of expressing the disability in terms of the percentage loss of earning power, and how little it has been made with us a subject of medical study.

The best known of several tabulations of the loss of earning power in

* The appearance of Pearce Bailey's English translation of E. Soliebiewski's "Hand Atlas of Diseases due to Accident" (W. B. Saunders, Philadelphia,) will materially improve matters.

regard to the leading forms of permanent disability, is that known as the Vienna Schedule, which has served as a basis for most other similar tables. It must be noted that in certain points minor differences exist among the standard authorities, and that the values given are only intended to be approximative and to serve as a point of departure in deciding individual cases. It must be remembered that the Vienna schedule is expressed, so to speak, in terms of unskilled workman. From this relatively simple problem, the variations called for by special forms of occupation can be determined. From the point of view of disability workmen are divided into four classes :—

- (1) The unskilled laborer.
- (2) The laborer whose work requires skill as well as strength, such as the bricklayer, mason, etc.
- (3) The handicraftsman : as carpenter, joiner.
- (4) The higher grades of skill, as mechanics.

It will be seen that the same injury might produce different results in each class. For instance, anything which impairs the finer movements of the fingers or wrists would represent a great loss to an engraver, whereas a laborer would be relatively little impeded by a partially ankylosed wrist, which was not painful and permitted of heavy work being done. On the other hand, a sensitive scar of the hand, which would incapacitate the laborer completely, might not interfere at all with the finer movements of the engraver. Accidents lessening the flexibility and free motion of the feet without impairing their firmness as a base of support and rendering them painful give relatively slight impairment to laboring men as compared with that caused in the case of roofers or sailors, etc. Injuries to the lower extremities cause much less inconvenience to those whose work can be done in a sitting posture than to others. Certain callings require unusual acuteness of sight and hearing as compared with others.

The following factors also come into account :—Can the condition be rectified by mechanical appliances if it cannot be improved by treatment ? Is it likely to get better or worse ; is it temporary or permanent ? Can the person without difficulty adapt himself to another occupation ? Does the condition, besides incapacitating him from work, cause him an actual increase of expense for nursing, attendance, etc. ? Are his chances of securing other employment diminished ? Does he suffer from pain ? Has the injury made him liable to any special disease ? Is the condition in part due to disease existing before the accident, or to some complication set up or predisposed to by it ? Can operative treatment be undertaken ? (The patient is under no obligation to submit himself to any operation which may be dangerous, all involving general anaesthesia coming under this category.) Was the

condition due, not to accident, but to occupation disease? Did it arise from causes unconnected with his work?

Medical men as a class tend to underestimate the injury to laboring men, and especially to reckon too short a time as the limit of disability after injury of the bones or of parts (hands and feet) used in rough work. The date at which a patient can be released from hospital treatment or when medical supervision becomes unnecessary, is often only one-half of the time required to put him in condition to renew his work. The schedule policies adopted by many of the insurance companies are not well adapted for the insurance of working men, as they are compiled on tables prepared for classes whose work is largely clerical or sedentary.

The frequency of actual simulation is much smaller than one would gather from medico-legal literature, and the cases, as a rule, are very easy of detection. On the other hand, more or less tendency to exaggeration is found in the majority of cases. Attributing to a recent injury conditions which pre-existed is perhaps the most common form of simulation: a decision on the matter may be difficult when the case is not seen soon after the alleged injury.

Just as in bacteriology we have certain postulates necessary to constitute proof of injury due to accident we require here:—

- (1) There must be proof of the occurrence of an accident or injury.
- (2) The accident and its effects must have occurred suddenly.
- (3) The part affected must be located in the region injured.

It is astonishing to find how often these obviously essential data are unproven in cases of alleged injury.

Age. Injuries of young persons heal more rapidly than those of the old, and adaption to altered conditions is more complete and rapid. The immediate effect of injuries on the very young and very old is more marked than in adults. The predisposition to special diseases is greater at certain times of life, for instance, the liability to hernia in cases with advancing age.

Sex. Females need higher compensation for disfigurement than males. Slight disfigurement may be compensated only in case of females.

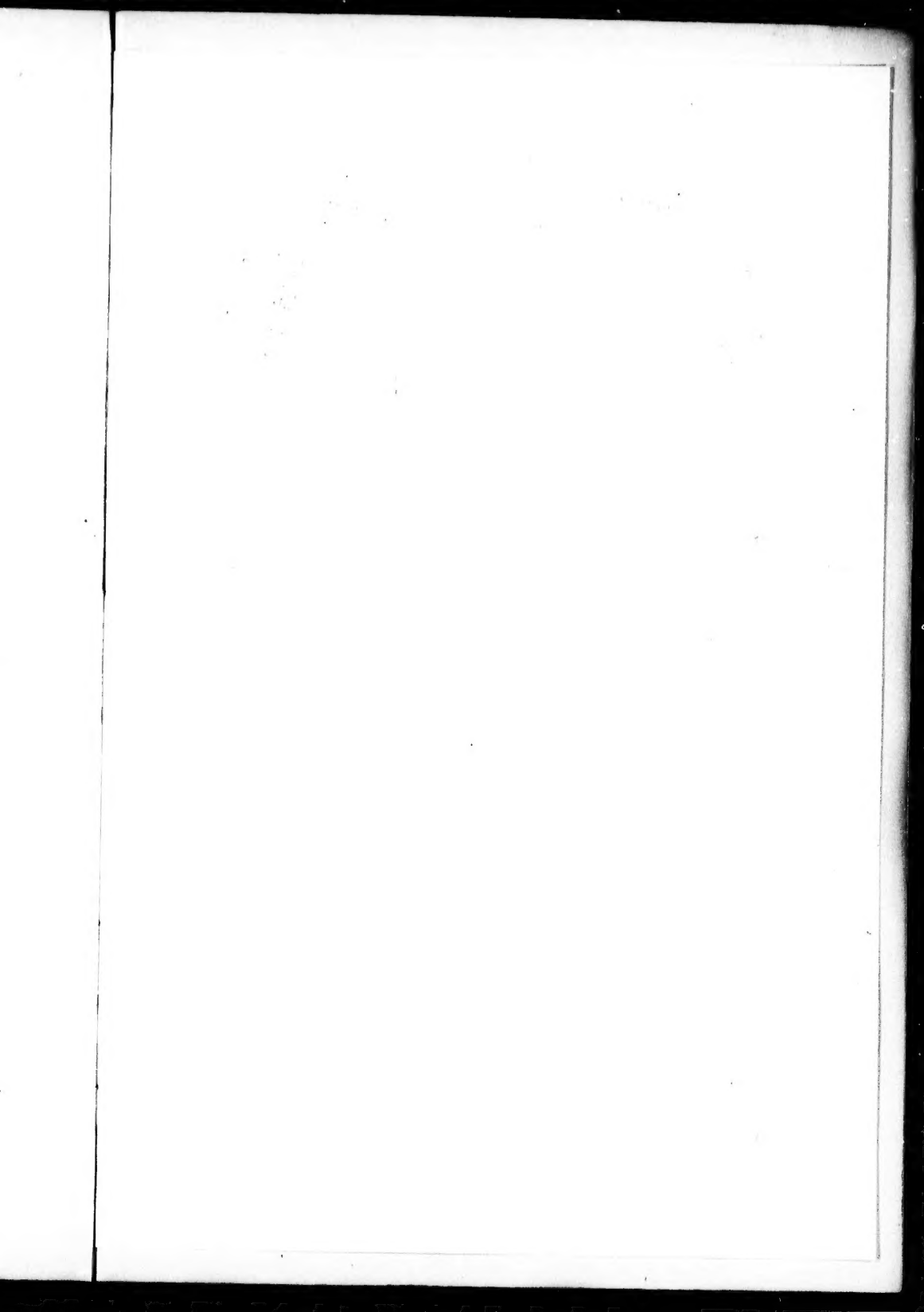
Previous Disease. The occurrence of an injury may leave a liability to the same injury. This is especially noticeable in dislocations, in abnormal conditions of the skin predisposing to erysipelas from trifling injury, or from exposure. Fragility of the bones from rickets or osteoporosis renders fractures more probable. The enlarged spleen in malaria is subject to injury. The existence of a latent or partly cured infectious disease, such as tuberculosis, may lead to unexpectedly bad results when persons are injured in the chest or subjected to a prolonged confinement. Disease of the ear greatly increases the danger of infection and meningitis in fractures of the base of the skull. Chronic heart diseases and

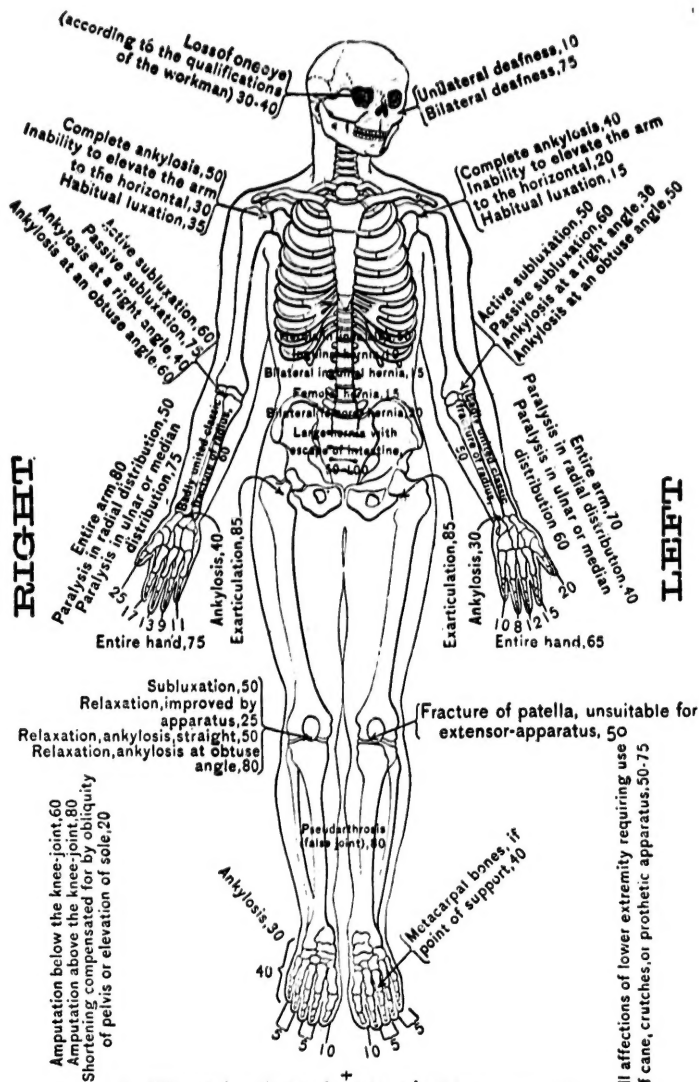
chronic lung diseases lessen the chances of recovery from a severe injury or shock, and influence unfavourably injuries of the chest wall. The enlarged (or pregnant) uterus is specially subject to injury from falls or other external causes. A latent appendicitis may be made acute by very moderate injuries of the abdomen. Rheumatic conditions may prolong the disability from injuries of the bones and joints. A disease may be the direct cause of the injury, as in epilepsy. The occurrence of disease as a consequence of injury is treated of more fully in another part of this article.

Alcoholism is one of the most important factors in regard to injury. Besides being a frequent cause of accident or neglect it may effect very unfavourably the chances of recovery. There is a great tendency amongst heavy drinkers, apparently in good health, to be seriously affected by relatively trifling injuries. The mere fact of confinement to bed through fracture of a bone is very liable, in a drinking man, to lead to an attack of delirium tremens, often followed by pneumonia. Hence, whenever practicable, methods of treatment which permit such patients to be up and about, are preferable. The grave effects of chronic alcoholism, such as ascites, renal cirrhosis, etc., lessen the chances of recovery and predispose to sudden death.

Occupation. Certain accidents are specially liable to occur as a direct result of the occupation; toxic effects from inhalation of poisonous fumes, effects of changes of temperature and absorption by the skin of poisonous substances, apart from the direct danger of mechanical injuries from falling bodies, defective scaffolding, or other support; moving machinery, or electric currents, etc.

Over-exertion in connection with employment may be brought about by accident and is a frequent cause of sprains, ruptured muscles or tendons, and of hernia. On the other hand, many conditions ascribed to simulating accident may be really gradual in onset and due to unhealthy occupations. These should be carefully excluded and hence suddenness of onset in accidental conditions is an important point to establish. Predisposing conditions due to occupation may aggravate the effect of accident. The occupation may be such as to render it temporarily unsuitable for persons who have been injured. A tendency to neuralgia, left after injuries, makes exposure to draughts or changes of temperature injurious. Conditions leading to a defective closure of the eyelids or to conjunctivitis excludes from occupations carried on in dusty places. A tendency to giddiness, partial deafness, much loss of vision, or inability to move promptly, makes it dangerous to continue an occupation which necessitates being in the presence of moving machinery or involves the perception of signals. Callings which bring the person much in contact with the public, are more or less debarred to persons having





No difference in estimates for right and left lower extremities
 G. Haag's graphic schedule showing the percentage-loss of earning-power through permanent partial disability. (Compensation allowed equal to 60% of disability under the state system of compulsory insurance of workmen.)

Reproduced from Gould's American Year Book of Medicine and Surgery. (By permission of W. B. Saunders, Philadelphia.)

mutilating or disfiguring injuries; and those which necessitate shouting out orders, to persons whose vocal organs have been permanently damaged. The percentage frequency of the common forms of accident vary greatly in rural and urban districts.

In persons who have been injured, one has to determine if the disabling effects are transient or permanent, and if such permanent conditions will improve, remain stationary, or get worse. When an annuity is paid, this may be increased or decreased according to the course of the case. The chances of ultimate recovery are often greatly enhanced by such measures as may relieve the person from the necessity of attempting heavy work before he is fit for it. On the other hand, the definite and final settlement of a claim one way or another, often has a wonderfully beneficial effect upon cases represented as being quite hopeless, and it is certain that the annuity system by no means tends to bring about the cures and lends itself to grave abuses.

The relative frequency of percentage compensation was found in Germany to be in the following order: 10, 20, 15, 50, 33, 25, 100, 30, 40, 75, 60, 66, 80, 90, 70. Thus 10 per cent. was the most and 70 the least frequent of the allowances made; the average was 30 per cent., disability below 10 per cent. not being compensated.

It is a matter both of common law and of regulation, that persons receiving such indemnity would take every reasonable means to favour the cure. It is quite common everywhere for the interested party to pay for the medical treatment. The occupation followed should be one which will favour recovery. The employment of artificial limbs and supports may be a reason for reducing the indemnity.

I. SCHEDULE OF PERMANENT DISABILITY.

The following table shows the percentage of loss of earning power, in the case of unskilled laborers.

I. HEAD.	Disability per cent.
Limitation of movement	8-16
Bone defect with epileptic attacks	50-70
" " " paralysis right arm	80
" " " and leg	100
Scar and bone defect of cranium attacks of pain	33
Hemiplegia following apoplexy	80-100
Headaches and weakness of right arm following depressed fracture.	56-60
Incurable neuralgia	15
Persistent headache, dizziness, nausea following concussion of brain	80
After injury headache, dizziness, epistaxis	50
Incurable despondency, irritability and headache	50
Incurable epilepsy only result	30-50
Incurable insanity	100
Permanent weakening of mental faculties, loss of memory	40-50
Weakness, unsteady gait, lessened mental capacity, confusion of ideas following fracture of skull	70-80

II. FACE.	Per cent.
Disfigurement from scars of cranium (more in case of females).....	8-16
Loss of nose.....do.....	10-15
Loss of incisor teeth (females only).....	5
Defective closure of one eyelid.....	8
" " both.....	16
Incurable trismus.....	33

III. EYES.	
Loss or blinding of one (according to employment).....	25-33
Loss of both eyes.....	100
Defective sight one eye.....	25
Trachoma extreme.....	100
Chr. conjunctivitis.....	15
Obstruction of lachrymal duct.....	8
Nystagmus.....	16

Josten's table for estimating loss of vision partial in both eyes.

RULE.—Estimate loss of central vision in each eye if over 50 per cent. (amounts below 50 per cent. disregarded).

Follow column giving the vision of one eye below V, and of the other eye to the right of V, the intersection of the column will be at the percentage of disability for both eyes.

V.	0.50	0.40	0.30	0.20	0.10	0.00
0.50	0	6.5	13.5	20.0	26.5	33.5
0.40	6.5	14.5	22.0	30.0	38.0	46.0
0.30	13.5	22.0	31.5	41.0	50.0	60.0
0.20	20.0	30.0	41.0	52.0	62.5	73.5
0.10	26.5	38.0	50.0	62.5	75.0	87.0
0.00	33.5	46.0	60.0	73.5	80.0	100.0

IV. EARS.	Per cent.
Loss of one ear (or complete deafness one ear.).....	8
Moderate deafness one ear.....	0
" " both ears unless occupation needs acute hearing)	0-8
Slight deafness both ears.....	0
Chr. discharge from ear.....	15-30

V. NECK AND VOICE.	
Permanent wearing of tracheotomy tube.....	50
Inability to read (alexia).....	75
Inability to speak (aphonia).....	40
Hoarseness or whispering voice.....	8
Dyspnoea from stenosis of larynx.....	33-40

VI. CHEST.	
Restricted movement from distortion of chest wall, extreme.....	60
" " " " " " moderate.....	33
" " " " " " slight.....	8
Restriction of movement from badly healed fracture of ribs, extreme	40
" " " " " " medium.....	25
" " " " " " slight ..	8
Intercostal neuralgia.....	25
Lung disease, severe.....	100
" medium.....	40
" slight.....	0-8
Traumatic heart disease.....	0-100

VII. ABDOMEN.

Pain in abdominal wall and inability to carry heavy burdens, due to rupture or sprain of muscles	25
Prolapse of uterus	25
Disturbances of digestion, extreme	80
" " medium	25
" " slight	0
Liver diseases, extreme	80
" " medium	25
" " slight	0

VIII. HERNIA.

Hernia in laparotomy scar	25
Umbilical hernia	15
Ventral hernia	25
Inguinal hernia	8
Omental hernia	8
Femoral hernia	15
Hydrocele of cord	15

IX. GENITO-URINARY.

Inability to retain urine	15-20
Difficult micturition	15
Loss of penis	8
Loss of testes	15
Urinary fistula	50
Painful enlargement of testes and spermatic cord	15
Rupture or loss of kidney	20

X. TRUNK AND VERTEBRAL COLUMN.

Impaired mobility, extreme	50
" " medium	25
" " slight	8
Rupture of lumbar muscle, severe	50
" " medium	25
" " slight	8
Disease of spinal cord, severe	100
" " medium	66
" " slight	40

XI. UPPER EXTREMITY.

Loss of both hands or arms	100
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Upper Arm.

Loss of arm above elbow	66-75
Anchylosis at shoulder	50-60
False joint at shoulder	50-60
Wasting of muscle	25-60
Chronic arthritis of shoulder	16-66
Badly set fracture of clavicle	16-50
Badly healed dislocation, blade injuries	8-50

Forearm.

Loss at wrist or elbow	66-75
Anchylosis of elbow, extended	40-50
" " semi-flexed	25-33
" " flexed	33-40
False joint	50-60
Diminished flexion or rotation	25-60

Hand or all Fingers.

Loss at wrist	66-75
Anchylosis of wrist	25-33
Loss of all fingers but not metacarpals	66-75
Anchylosis of all fingers	66-66
Distortion of all finger	66-66

Single Digits.

Loss of single thumb, loss of metacarpal.....	25-33
Loss of both phalanges.....	25-33
Terminal and $\frac{1}{2}$ proximal.....	16-25
Terminal phalanx.....	5-10
" thumb tip (special trades only).....	0-5
Stiffness 1st and 2nd joint.....	25-33
" 1st joint.....	15
" 2nd.....	8
Distorsion and fixation in flexed position, extreme.....	25-33
" " " medium.....	16-25
" " " slight.....	8-16

Forefinger.

		<i>Middle finger.</i>	<i>Ring finger.</i>	<i>Little finger.</i>
Loss with metacarpal.....	16-25	8-16	8-16	0-8
Loss of all 3 phalanges.....	16-25	8-16	8-16	0-8
Loss of 2nd and 3rd phalanges.....	8-16	8	8	0
Loss of terminal.....	0	0	0	0
Loss of finger tip.....	0	0	0	0
Anchylolysis of all three joints.....	16-25	8-16	8-16	0-8
" proximal and middle.....	16-25	8-16	8-16	0-8
" proximal.....	8-15	8	8	0
" middle.....	8	8	8	0
" proximal and terminal.....	15	8	8	0
" middle and terminal.....	8-16	8	8	0
" terminal alone.....	0	0	0	0
Fixation in flexed position, extreme.....	16-25			
" " " medium.....	8-16			
" " " slight.....	0-8			
Chronic arthritis of one finger.....	8-33			

Thumb.

Thumb and fore.....	40-50
" middle.....	33-46
" ring.....	33-40
" little.....	25-33
Thumb, fore and middle.....	50-60
" " ring.....	50-60
" " little.....	40-50
Thumb, fore, middle and ring.....	60-66
" " " little.....	60-66
Thumb, middle and ring.....	50-60
" " little.....	33-40
" ring and little.....	33-40
Fore and middle.....	25-33
" ring.....	25
" little.....	16
" middle and ring.....	40
" " little.....	33
Middle and ring.....	16
" little.....	16
Middle, ring and little.....	25
Ring and little.....	16

Combined loss of fingers of both hands.

Loss of all fingers on both hands except one finger on each.....	100
Loss of both thumbs.....	50
Thumb and forefinger of one hand, and opposite thumb.....	55-60
Thumb, forefinger and middle or ring finger of one hand with loss of other thumb.....	66-70
Loss of all fingers of one hand except forefinger and loss of opposite thumb.....	75
Loss of both fingers and forefinger.....	80
Chronic arthritis of several or all joints of both hands.....	30

XII. LOWER EXTREMITY.

Loss of both legs.....	100
One thigh and one leg.....	100
Complete paralysis both legs.....	100
Chronic arthritis.....	16-66
Injuries to pelvis.....	16-80
" fibrous tissues.....	60
Synovitis.....	8-33
Tenosynovitis.....	8-33
<i>Thigh.</i>	
Loss of thigh.....	75
Anchylosis of hip, extended.....	50
" flexed.....	60
Wasting muscles of one thigh.....	33
Healing of fracture with diminished motion of knee or ankle or both.....	25-66
For neuritis, or injury of nerves 25 per cent. more than for loss of limb.	
<i>Leg.</i>	
Loss below knee.....	66
False joint at ankle.....	40-66
Anchylosis of knee, extended.....	40
" flexed or over extended.....	50
False joint at knee.....	60
<i>Foot.</i>	
Loss at or below ankle.....	66
Injury to ankle bones.....	16-40
Anchylosis of ankles with flat foot.....	40
" " with.....	50
Chr. arthritis of one or more joints.....	15-50
<i>Toes.</i>	
Lower extremity foot.....	8
Loss of great toe.....	10
" any other toe.....	6
" all toes of one foot.....	50
With 5-10 per cent. more for loss of metatarsal bones.	

II SCHEDULE OF TEMPORARY DISABILITY.

The following table compiled from the statements of the various standard authorities, notably C. Kauffman, shows the duration of temporary disability and some of the commoner complications and consequences of frequent forms of injury.

Explanation of abbreviations :

Numbers indicate duration of disability in weeks ; unless otherwise stated.

p.p.d., permanent partial disability.

per cent., percentage loss of earning power.

p.t.d., permanent total disability.

B., confinement to bed necessary.

H., treatment in hospital preferable.

F., likely to be fatal.

Complications are enclosed in brackets.

HEAD.

SCALP : *Contusions :* Slight, 1—2 ; severe, 2—6 ; (blood cysts, neuralgia, varicosities.)

Wounds : 1—2, B. ; *Lacerations :* 2—6, B. ; (4—8, F. ; erysipelas, 4—12, H. F. ; wandering erysipelas, 8—26 ; loss of hair ; sensitive to heat and cold ; neuralgia ; insanity ; sensitive scar ; epilepsy, aura from scar).

CRANIUM : *Contusions :* Same duration as scalp wounds ; (osteoma, osteosarcoma).

Fracture : Vault or base, 1—6 months, H. ; often p.t.d. or p.p.d. ; (meningitis, F. ; encephalitis, F. ; abscess, F. ; thrombosis and pyemia, F).

BRAIN : *Concussion :* H. ; immediate unconsciousness lasting hours or days, vomiting.

Compression : H. ; slow, hard, irregular, pulse.

Contusion : H. ; cramps, spasms or paralysis immediately after injury. In compression, contusion and concussion, (mental disturbances ; paralysis ; tinnitus ; headache ; impaired vision, hearing and speech ; tuberculous meningitis ; diabetes ; polyuria ; white softening ; chronic brain abscess—headache and dizziness, exclude ear disease ; brain tumours ; epilepsy ; insanity—connection recognised if early after accident).

FACE : *Cuts, Lacerations and Contusions :* 1—4 ; heal rapidly ; (salivary fistula, 4—8 ; erysipelas, 3—4 ; relapses frequent).

Burns : if superficial, 2—4 ; from boiling liquids and explosions ; deep, or corrosions ; (scarring and disfiguring require plastic operations—important in young women ; obstruction of orifices ; ectropion ; danger of foreign bodies ; paralysis of facial).

Fractures : of nose, 2—4 ; (lacrimal fistula, traumatic oziema, malposition in setting) ; of malar bone, (rare) 3—6 ; of superior maxilla : 4—10 (necrosis) ; of inferior maxilla, 4—10, (necrosis, aspiration pneumonia).

Loss of Teeth : disfigurement ; (10 per cent. p.p.d. to young women for loss of incisors).

EYE.

EYELIDS : *Contusions :* 1—3. *Lacerations :* 2—4 H. ; *Burns :* 3—10 ; *Stabs and Cuts :* 1—2 ; (ectropion, entropion, ptosis, 2—4, H. ; operation).

CONJUNCTIVA : *Foreign Bodies :* 1—3. *Lacerations :* 1—3. *Burns :* caustics (keratitis, synblepharon. Trachoma—when case infection occurs accidentally in course of treatment).

CORNEA : *Foreign Bodies :* not infected, 3—7 days ; infected, 1—4 ; (loss of sight).

Contusions : 4—8, (hypopyon, loss of vision, phthisis bulbi, liable to take unfavourable course later).

Wounds : non-penetrating, seen early, 1—2 ; if neglected, 2—6, B. ; (hypopyon). Penetrating cuts and stabs, 1—2 ; not infected.

Lacerations : 6—12, B. ; (iridectomy, cataract later, opacity of cornea—central or peripheral).

SCLERA : *Wounds :* superficial, 1—2 ; perforating,—involving ciliary body, choroid, retina, or with foreign bodies, non-suppurating, 6—12 ; often loss of vision later. Suppurating, 6—26 ; loss of eye, (sympathetic ophthalmia).

IRIS : *Contusions :* paralysis of accommodation, traumatic mydriasis, 6—10. Separation of iris, no operation, 2—4, B. ; operation, 4—12, B. ; (p.p.d., loss of vision).

Foreign Bodies : non-septic, seen early, 2—4 B. ; septic, (panophthalmitis), 4—6 B. ; loss of eye.

Wounds : usually severe iritis, prolapse of iris and dislocation of lens, 4—12 ; (often panophthalmitis).

LENS : *Rupture of capsule :* resorption, 6—8 ; (in young persons). Inflammation, 4—16, H.

Foreign Bodies : opacity and suppuration requiring extraction, and perhaps secondary operation, 2—15 months, H.

Wounds : operation usually required, 2—6 months, H. Note : Resulting

aphakia cannot usually be corrected by glasses during work if other eye sound. Eyes operated on for cataract require almost same compensation as for loss—30 per cent. Loss of eye with cataract suitable for operation, 20 per cent. Blindness of one eye when the other has a cataract, 70 per cent. if successfully operated.

CHOROID, RETINA AND VITREOUS: *Contusion and Hemorrhage*, 4—8, B.

Retinal Hemorrhage: slight, 2—6, severe, 4—12; (severest forms near macula, good prognosis only if prompt recovery; detachments usually incurable).

Foreign Bodies: good results in 6 per cent.; 6—12, H.; (usually panophthalmitis and sympathetic ophthalmia).

Wounds: non-suppurating, common, 6—10. Suppurating call for enucleation; 6—12, H.

ORBIT: *Foreign Bodies*: small, not dangerous; large, dangerous from suppuration; (meningitis).

Wounds: stabs and cuts from instruments or splinters; if suppuration, 4—20 H.; (meningitis, F).

EAR.

LOBE: *Contusions and Abrasions*: 1—2.

Lacerations and Cuts: 1—4.

Burns and Corrosions: 2—6, (deformity or defect; hematoma; stenosis of meatus).

MEATUS: *Foreign Bodies and Injuries*: 1—2; (entrance of water; blow on jaw; fracturing skull).

TYMPANUM: *Rupture*: foreign bodies usually in upper part; (separation of ossicles; fracture of malleus or stapes); indirect injury from blow, fall, alteration of air pressure or explosion; 1—8, B.; (purulent otitis prevented by aseptic measures; curable; subjective noises may persist for months; persistence of perforation or recurrence of ear disease).

TYMPANIC CAVITY: *Foreign Bodies*: cause suppuration (meningitis); hemorrhage, 6—15; (deafness may persist; polypus; bone necrosis; complete healing necessary before beginning work).

LABYRINTH AND NERVE: *Concussions*: blows and falls, striking head or any part of body; explosions and noises; (dizziness, loss of co-ordination, tinnitus); 8—12; often incurable.

HEARING: Slight or medium deafness of one ear, 0; severe, one ear, 10 to 30 per cent.; deafness of both ears, 30 per cent.; (chronic ear disease shortens expectation of life; abscess; mastoiditis, pyemia, F).

NECK.

Corrosions and Burns: (scarring and fixation). Injury to deeper tissues from explosions and lacerations; (larynx, hyoid, trachea, vessels and nerves exposed); injury of carotid or jugular, usually F.; after ligature, paralysis or aphonia in 30 per cent. of cases.

HYOID BONE: *Fracture*; 3—6; (dysphagia).

LARYNX: *Contusions*: may be fatal from shock.

Fractures: dangerous; also dangerous after tracheotomy from obstruction of tube (disturbance of speech; difficulty of changing canula; supervision required).

LOSS OF SPEECH: aphonia and hoarseness; (asymbolia; asphasia; alexia from central lesions).

CHEST.

THORAX : *Contusion :* (shock fatal (?) ; loss of consciousness ; syncope ; heart and lung diseases).

Contusion : slight from blows or falls ; ecchymosis of skin and muscles ; 1—2. Severe, from crushing ; may have internal injuries with little injury of chest wall ; (lesions of heart, diaphragm, and vessels) ; often fatal ; may heal in 1—4 ; or lead to chronic disease.

Fractures sternum, simple, 4—10 ; compound, usually fatal ; (cough, palpitation of the heart, dyspnoea, suppuration and abscess) ; of ribs simple, not dangerous, 5—12 B. ; (danger in old persons of lung disease). Compound fracture, (haemothorax ; heals after aspiration, rarely suppurates ; pleurisy, heals readily with adhesions, may suppurate, 2—4 months, H. ; (pneumonia, oedema of the lungs, neuralgia at site of injury, fistula, curies of rib,—tuberculous but curable, 2—4 months,—lung tuberculosis most fatal).

Wounds : burns, (scarring and contraction) stabs and cuts are rare in industrial accidents. Wounds of chest and lung generally curable unless involving large vessels, but suppuration common. Heart wounds : not always rapidly fatal, unless in auricles, sometimes curable. Rupture of diaphragm, from falls and run over accidents, usually associated with fatal injuries.

Heart Disease : Traumatic forms include (1) acute endocarditis, (2) chronic endocarditis, (3) rupture of valve, (4) nervous heart disturbance, (5) pericarditis, (6) aggravation of existing disease ; after injury, psychic shock or over exertion. Heart dilatation a prominent symptom in serious cases.

Lung Disease : Traumatic forms include (1) acute traumatic lobar pneumonia, (2) localized traumatic pneumonia, (3) bronchopneumonia, (4) secondary pneumonia, (5) laceration of lung, (6) gangrene, (7) traumatic tuberculosis of lung, (previous condition of lung important, also previous health). Main diagnostic symptom of traumatic pneumonia, early appearance of bloody expectoration.

Traumatic Pleurisy : 50—60 per cent. recoveries.

ABDOMEN.

ABDOMINAL WALLS : *Contusions :* Ruptured muscles from direct violence, overstretching and heavy lifting, usually in recti below umbilicus, 4—6.

Perforating Wounds : without injury of organs, usually heal readily, 2—8 B. ; (prolapse of omentum or intestine).

STOMACH : *Contusions :* from compression against vertebrae, 1—3 months ; (gastric ulcer may follow, 4 per cent. due to trauma, haematemesis leading symptom).

Stabs and Cuts : operation immediate ; 2—3 months.

INTESTINE : *Wounds :* same as stomach. *Contusions and Lacerations,* operation imperative ; unless early operation, are fatal from peritonitis, gangrene or hemorrhage.

LIVER : *Contusions :* occasionally occur. *Lacerations :* common ; result good by early laparotomy, otherwise fatal.

SPLEEN : same as liver ; often no injury to abdominal wall ; (constitutional disturbances after removal).

HERNIA : *Inguinal :* predisposition exists in most cases ; sudden onset necessary to show traumatic origin ; immediate pain and inability to work ; enlargement of ring or enlarged veins point to pre-existing hernia ; causes, direct violence, lifting or heaving, in heavy work ; early examination needed, improbable when simultaneous double hernia, or unilateral hernia with en-

larged ring on opposite side, or inguinal testis exists. Old hernia may be demonstrated: (1) by records of examination for military service, or accident or life insurance; (2) signs of truss; (3) size larger than lemon; (4) irreducible but not strangulated; (5) inguinal canal short and wide. Hernia can rarely be stated to be quite recent; burden of proof rests with claimant. Indications for gradual onset: (1) continuous heavy work; (2) advanced age; (3) statements that a moderate load was found too heavy. Compensation based on 10 per cent. disability, less in females, double hernia same compensation as single as same truss suffices; increase compensation when truss is worn with difficulty or causes inflammation, or if hernia suddenly increases while wearing a proper truss.

Strangulation is to be compensated for if due to injury or over-exertion. Strangulation of a hernia already compensated for may be admitted if a good truss is worn, but not unless worn at time of accident. Always examine both sides to see if recent or old; always test efficacy of truss after application.

Femoral, umbilical and ventral: same as inguinal, but may require more compensation as truss is less easily applied.

KIDNEY: *Contusion and concussion*: hæmorrhage and traumatic nephritis; (casts and blood after a few hours, albuminuria); may be fatal.

Lacerations: may be free from symptoms (blood) in a few days, 4—10, H.; hydronephrosis; *floating kidney* requires bandage or operation.

BLADDER: *Rupture*: from direct violence or lifting, one-third of operated cases recover; 4—12, H.

URETHRA: *Lacerations*: in pelvic fractures, 40 per cent. fatal; from straddling falls, 14 per cent. fatal; 6—12, H.; may leave stricture; liable to relapse.

PENIS: *Contusions and crushing*: 2—4; *lacerations*: 3—8 B.; 2—3 months (deformity).

TESTIS: *Contusion and Concussion*: 1—2; liability to sudden death from shock; hæmatocele, 3—4; hydrocele, 4—6; purulent inflammation, 4—8, (spermatocele and varicocele); loss of testis, 10—15 per cent. if double, or much more if followed by hypochondriasis.

FEMALE GENITALS: *Abortion* from injury of pregnant uterus, *prolapse* from over-exertion; signs of recent origin, pain and tenderness, acute inflammation, absence of chronic inflammation, ulcers, thickening and attrition.

TRUNK AND SPINAL CORD: *Rupture of muscles*: 3—10, B.; lumbago, usually rheumatic in origin, chief difficulty of diagnosis.

Contusions: 1—3 months; contusions of vertebrae, slight, without injury of cord, 1—4 months, B.; severe, may last months or years or give p.t.d.

Fractured vertebrae: 6—12 months. *Dislocation*, same as fracture; (inflammation of spinal membranes, meningocele, meningeal hæmorrhage, myelitis or sclerosis of cord, paralysis, bed sores, cystitis, often fatal).

UPPER EXTREMITY.

CLAVICLE: *Fracture*: 5—10; sometimes bilateral; in women greater need to prevent deformity by B. and traction; (injury to nerves and vessels, overgrowth of callus, shortening, disfigurement, false joint may require suture, effect on movement, atrophy of deltoid).

Dislocations: 4—12, H.

Fracture: of blade or acromion, 6—8; usually no permanent disability, but may prevent full motion of arm.

Of neck, 6—12; injury of axillary nerve and paralysis of deltoid; danger of stiffness of shoulder joint and difficulty in raising arm.

SHOULDER : *Contusions :* great functional disturbance at first ; rapidly relieved by treatment ; 4—8.

Sprain : swelling and tenderness in anterior part of capsule ; healing prompt ; 4—8.

Dislocation : if promptly recognized and reduced, 4—8, with no further results ; (separation of great tuberosity and fracture of head of humerus, 6—10 ; if dislocation reduced, may have complete cure ; otherwise, pressure on vessels and nerves require subsequent operation ; primary injury to nerves or compound wounds ; paralysis of circumflex nerve and atrophy of deltoid ; recurrent dislocation from trifling causes happens when arm is used a few days after reduction ; old dislocations occur through non-recognition in early stage, usually in cases not seen at first, attempts at reduction may cause injury to nerves or vessels or fracture of humerus).

HUMERUS : *Fracture :* separation of great tuberosity often confused with sprain, 8—12 ; old cases good objects for mechanical treatment, 2—4 months, may have p.p.d. from limited mobility in raising arm or chronic arthritis. Anatomical neck or epiphysis, 8—12, best results from extension.

Compound Fracture : 2—4 months ; (injury to radial nerve, operation ; injury of axillary artery, operation, 8—10).

AXILLARY VESSELS : injured by external causes or in reducing old dislocations ; may be fatal ; usually p.p.d. from weakness of arm and disuse of shoulder.

AXILLARY NERVES : *Injury and contusions of shoulder or crushing :* if severe, complete and incurable paralysis of arm ; in slight cases, neuralgia ; (neuritis from crutches).

SYNOVITIS OF SHOULDER : liable to occur in persons carrying burdens or from injury ; 3—6 ; paralysis of deltoid from prolonged rest and fixation, besides causes given above.

SHAFT OF HUMERUS : *Fractures :* 8—12 ; if transverse, extension and B., if fragments override ; compound, non-infected, the same as simple ; if infected, may need amputation ; (nerve injuries, usually to radial ; malposition requires operation ; false joints).

ARM MUSCLES : *Laceration :* of muscles and tendons, common ; in biceps, separation of scapular origin in heavy lifting ; (atrophy and weakness of flexors).

NERVES OF ARM : *Crushing or section :* (neuralgia, suture, stretching, paralysis and trophic injuries, blebs and ulcerations of hands and fingers after injury of median and ulnar). Note : Examine condition of nerves, test sensation, etc., before applying splint, to demonstrate primary injury.

ELBOW : *Laceration or burns of skin :* scarring, 8—12 ; may require plastic operation.

SYNOVIA : over olecranon, injured by falls ; may suppurate if neglected, 4—6, B.

BICEPS TENDON : *Section or rupture :* suture.

ULNAR NERVE : injured in dislocations.

ELBOW JOINT : *Sprains :* usually associated with hæmorrhage ; 4—6 ; stiffness cured by mechanical treatment.

Contusions : posterior and inner surface ; inflammation of bone ; 3—8.

Dislocation : backward most common ; 1—2 weeks after reduction may begin passive motion ; 4—8 ; often limitation of movement.

Fracture through elbow : stiffness is now less frequent owing to mechanical treatment ; compound, good results if properly treated ; (infection ; nerve injuries, p.p.d. mostly from interference with nerves of hand).

Fracture through condyles . 8—12, B. ; deformity, operation.

FOREARM : *Contusions* : usually heal well, even with much swelling ; 4—8 ;

Wounds : often complicated with injury of vessels, nerves, and tendons ; suture beneficial even years later.

Crushing : causes extensive separation of skin ; 4—12 H. ; often p.p.d.

Fractures : of both bones, 8—12 ; (ischæmic paresis of muscles from tight bandaging ; at first easy to treat ; if only noticed after removal of splints, leaves permanent effects ; interference with pronation and supination from bony adhesions, callus, or malposition, require operation ; false joint, may not cause disability ; in other cases, operation and fixation needed ;) treatment by extension in supine position.

Fractures of Ulna : in upper third, often dislocation ; 8—12 ; old neglected cases cause functional disturbance, operation and resection of head of radius or ulna.

In middle or lower third, 8—10 ; (pseudarthrosis or impaired rotation).

Fractures of Radius : in upper and middle thirds, pseudarthrosis if fragments not opposed but one supine and the other prone ; in lower thirds, Colles' Fracture forms 10 per cent of all fractures, often called fracture of the forearm ; or treated as sprained wrist ; 3 weeks fixed and 4 weeks gymnastics ; massage good, even in worst cases, but may take one to two years. (fracture of lower end of ulna may leave pain and disturbed function ; comminution of lower fragment, or fractures of carpal bones ; compound fractures, results bad ; worst results due to paralysis from tight plaster bandage).

WRIST : *Sprain* : massage, 2—4 ; with rest treatment, function disturbed for months ; heavy work might be better done than delicate hand movements.

Dislocation : rare ; usually means fractured radius.

Tenosynovitis : suppuration, 2—4 ; often relapses ; common about thumb in certain occupations, smith, carpenter, joiner, farm labourers, washerwomen.

HAND AND FINGERS : *Contusion and crushing* : from severe injuries, hence often protracted ; in crushing of ungual phalanx, remove nail to lessen risk of infection ; 2—4.

Sprains : 2—6 ; often lead to stiff joint with thickening ; benefited by massage.

Dislocations : rare ; Röntgen ray examination important ; 3—6 ; operation gives good results.

Fractures : bony union, 3—8 ; if soft parts are much injured and inflamed, 4—12 B.

Wounds : early treatment important ; first aid should be simple, water dressings, or iodoform gauze ; unskillful use of carbolic acid or perchloride of iron liable to produce gangrene ; infection of wounds most important, and phlegmon may occur through infection by callosities or small foreign bodies.

General considerations for assessing cases of hand injury.—The younger the person the greater the chances of adaptation ; new conditions or change of employment and ultimate improvement of condition ; heavier compensation needed for old persons. Sex : Men are better able to find work with injured hand than women, as the latter do chiefly fine hand work ; common labourers do not use fine finger movement ; skilled labour needs especially high compensation, if the injured finger is used in special occupation ; women require special compensation for deformity ; previous injury, if not already compensated for, should increase the amount of disability. Estimation of the loss of power of hand or arm to be tested quantitatively, the angle to which flexion is possible and the force in various parts to be tested and compared with the opposite hand ; the special effects of injury to nerves, as seen in the claw hand from beginning of the ulna nerve with the loss of

apposition of thumb, in which the hand is quite useless. In the radial nerve, absence of extension and abduction; in median nerve, loss of apposition, separation of fingers, loss of power of flexion, Dupuytren's contracture and ulcers also cause disability. Degeneration of muscles, electrical tests.

LOWER EXTREMITY.

PELVIS: *Contusions:* extensive ecchymosis, removable by puncture; separation of tissues (infection); 4-8, B.

Sciatic Nerve: *Contusions:* by falls or tumbling over when kneeling or squatting; 4-12, B.; (cramps and prolonged sciatica, nerve stretching, or section and suture).

Fracture: often multiple, always severe, gravity depends on implication of pelvic organs especially urinary tract; 2-4 months; (injury of urethra, 3-6 months, H.; often p.p.d.; fracture through acetabulum may affect hip joint).

HIP: *Contusions:* often present extensive separation of the skin and extravasation of blood or lymph; 4-8, B.; (contusion of groin, 1-2; often infected from injury of glands; rupture of psoas muscle, after severe exertion, pushing or lifting, 4-10, B.; injury of great vessels, danger of immediate bleeding, or gangrene of whole or part of leg).

HIP JOINT: *Sprains:* rare.

Contusions: falls on trochanter; 3-6, B.; if simple contusion healing good.

Dislocations: reduced when recent, 6-12, B.; fracture of acetabulum may make reduction harder, extension apparatus, 8-12, B.; in fracture of neck, dislocation unreduced; with union in good position, the gait is less disturbed than in simple unreduced dislocation; injury of great vessels may cause death from bleeding and gangrene; old unreduced dislocation may be reduced without operation, but latter is preferable; in unreduced dislocation, first, crutch used, then stick; if paralysis and pain remain from head of femur, it should be resected.

THIGH: *Contusions:* extensive and severe functional disturbance; 4-10, B.

Laceration of muscles: adductors or quadriceps; in tendons, suture required; results good; 4-8.

Wounds: complicated by infection, dangerous; after injury of large vessels, gangrene; crushing commonly from run-over accidents.

FEMUR: *Fracture:* of neck; intracapsular, rarely gives bony union in old people, 2-6 months; always have partial or total stiffness of hip-joint and shortening with a limp; (in old people, often bed sores and hypostatic pneumonia; extension and long splint); usual cause, external violence in long axis or axis of trochanter; rarely spontaneous; in impacted fractures, may walk with stick; often only sprain diagnosed and short rest in bed ordered; these cases later have profuse callus and ankylosis of joint.

Of shaft, simple, 3-4 months, H.; extensive twisting or separation of fragments, common; treatment by plaster; shortening usually considerable; malposition may require osteotomy; compound fractures heal well with good treatment, but if thigh is crushed, amputation indicated; (malposition; shortening; false joint, requiring fixation apparatus and walking out; stiffness of knee joint from inaction, requiring gymnastic treatment; relaxation of ligament, needing apparatus; atrophy of quadriceps; paralysis of peroneal nerve, from over extension of knee).

KNEE: *Wounds:* from falls, corrosions, cuts and bites; danger to popliteal vessels; in neglected cases, purulent arthritis,

Contusions : with bloody effusions, 4—8, B. ; on knee cap, bleeding into bursa.

Sprains : slight, 1—2 ; severe, 4—12, B. ; (relapsing synovitis with effusion ; uncertain gait ; fatigue and tendency to fresh sprain ; may cause fixation ; stiffness in joint with exostoses, p.p.d. ; muscle atrophy ; rupture of internal lateral ligament, 5—10, B., and apparatus, 1—2 years.

Dislocations : from severe violence ; good results if seen early ; 2—4 months, H. ; anterior and posterior dislocations often complicated by injury to vessels.

PATELLA : *Dislocation* : 3—12, B. ; readily healed if replaced but liable to recur ; if unreduced, motion is impaired.

SEMI-LUNAR CARTILAGES : *Rupture* : impaired motion requiring operation ; floating cartilage.

KNEE JOINT : *Fracture through* : 8—12, B. ; if comminuted, 8—16 ; if transverse ; (fibrous union ; with stiffness, mechanical treatment, 1—2 years ; weakness of quadriceps) ; fracture through condyles, 8—16 ; fracture through upper end of tibia, 12—24 ; (stiffness often results).

LEG : *Wounds* : *contusions* : *abrasions* : periostitis often diagnosed when merely bandaging bad ; varicose veins, special care necessary ; also if scars or ulcers are injured ; varicosity aggravated by accident and may lead to ulcer ; to be compensated if the direct result of accident ; *thrombosis* common, apart from varices ; pain felt in leg with swelling following ; patient may work one or two weeks with increasing pain before disabled ; if the accident can be proved, thrombosis may be regarded as due to it even if work is continued during interval.

Laceration : of muscles and sinews in calf, often tendo achilles ; 8—12 ; suture.

Fracture : shaft ; usually of both bones ; 4—6 months ; (stiffness of joints from disuse, massage beneficial ; malposition often leaves an angle ; pain from pressure on nerves ; eversion of foot, osteotomy ; X ray diagnosis important, callus at first transparent ; may have delayed union and false joint ; if treated by plaster splint or allowed to walk with apparatus, operation rarely necessary ; swelling of foot and ankle from interference with vessels or thrombosis relieved by massage to restore muscular tone, or by passive motion of joint ; thrombosis likely in advanced age ; compound fractures, 4—8 months, H. ; often leave necrosis of bone, fistulae or ulcers).

ANKLE : *Sprain* : usually from falling or jumping ; best results from massage ; 2—6 ; (swelling and radiating pain ; uncertain gait and tendency to sprains ; stiffness, if kept at rest during the cure ; good results by massage and mechanical treatment ; persons with varicose veins suffer most).

Dislocation : anterior or posterior ; 8—12, B. ; less disability from badly healed anterior than posterior ; calcaneus position than equinus ; operation with good result ; subastraguloïd, prognosis good ; in neglected cases, only hope of improvement is operation ; dislocation with fracture of astragalus, good if replaced, otherwise pain persists.

Fractures : through malleolus of fibula ; 2—4 months ; position of foot most important ; danger of subsequent stiffness.

Fractures compounded from injury by bone fragments ; (pressure necrosis ; swollen foot and leg ; thrombosis ; embolism ; and stiff joint, permanent if from callus, often in equinus position ; *flat foot* if fibular fracture set without correction of position ; prevents climbing and standing long, never perfectly healed benefitted by plate).

Fracture of malleoli, either the inner or outer may break; the commonest form, Pott's fracture of fibula and inner malleolus. Fractures above malleoli often comminuted, may need resection if compound, 3—6 months, H.

Fracture at tibio-fibular ligament may occur with sprain; in neglected cases, often leave flat foot.

Fracture of astragalus from falling or jumping often complicated with fractured malleoli and leaving club foot deformity; may leave severe results, especially ankylosis; X ray diagnosis important in all injuries of ankle.

FOOT AND TOES : *Wounds* : neglected, dangerous from sepsis and phlegmon; scars on soles, bad and may need operation; special liability to tetanus; infection may follow trivial wounds.

Contusions : 4—12; walking painful; badly fitting shoes aggravate the condition; bed and warm applications necessary.

Sprains : in cases of flat foot, very serious; may take years to heal.

Lacerations : with rupture of tendon and fascia; the plantar fascia may be tender for months.

Fracture : of os calcis, pain in standing and walking may persist from 2—4 years; of metatarsal, often interferes with function; pain after removal of bandages may last for months causing limping and limited use of foot.

Rules for assessing injuries of lower extremity.

(1) Certain occupations especially require steady footing; if climbing and good balancing necessary, motion must be free.

(2) In other occupations much walking is needed.

(3) In others, prolonged standing. For all these, good restoration of function needed, not merely cure of the injury. It should be noted whether the person can acquire a sedentary occupation and do his work sitting, or if he can only do light indoor work. The p.p.d. in lower extremity is 40—75 per cent. after serious injuries. The actual motion of the joint is to be accurately noted.

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